



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/801,697	03/17/2004	Toshiaki Ishii	1021.43671X00	1862
20457 7590 12/21/2010 ANTONELLI, TERRY, STOUT & KRAUS, LLP 1300 NORTH SEVENTEENTH STREET SUITE 1800 ARLINGTON, VA 22209-3873				
EXAMINER				
GRAYBILL, DAVID E				
ART UNIT		PAPER NUMBER		
2894				
MAIL DATE		DELIVERY MODE		
12/21/2010		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/801,697

Applicant(s)

ISHII ET AL.

Examiner

David E. Graybill

Art Unit

2894

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 October 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-11, 21-26 and 28-30 is/are pending in the application.
- 4a) Of the above claim(s) 9-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-21-26 and 28-30 is/are rejected.
- 7) ☒ Claim(s) 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03-17-04, 01-25-07, 10-11-07 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No.(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

The reply filed on 10-22-10 is not fully responsive to the prior Office action because it fails to conform to the provisions of MPEP 714.03:

37 CFR 1.111. Reply by applicant or patent owner to a non-final Office action.

(b) In order to be entitled to reconsideration or further examination, the applicant or patent owner must reply to the Office action. The reply by the applicant or patent owner must be reduced to a writing which distinctly and specifically points out the supposed errors in the examiner's action and must reply to every ground of objection and rejection in the prior Office action. The reply must present arguments pointing out the specific distinctions believed to render the claims, including any newly presented claims, patentable over any applied references. If the reply is with respect to an application, a request may be made that objections or requirements as to form not necessary to further consideration of the claims be held in abeyance until allowable subject matter is indicated. The applicant's or patent owner's reply must appear throughout to be a bona fide attempt to advance the application or the reexamination proceeding to final action. A general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references does not comply with the requirements of this section.

(c) In amending in reply to a rejection of claims in an application or patent under reexamination, the applicant or patent owner must clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. The applicant or patent owner must also show how the amendments avoid such references or objections.

Where a bona fide response to an examiner's action is filed before the expiration of a permissible period, but through an apparent oversight or inadvertence some point necessary to a complete response has been omitted - such as an amendment or argument as to one or two of several claims involved or signature to the amendment - the examiner, as soon as he or she notes the omission, should require the applicant to complete his or her response within a specified time limit (usually one month) if the period for response has already expired or insufficient time is left to take action before the expiration of the period. If this is done the application should not be held abandoned even though the prescribed period has expired.

Specifically, the 112 second paragraph rejection of claim 8 directed to the language "transmission fluid" has not been addressed.

Because the response appears to be bona fide, but through an apparent oversight or inadvertence the response is incomplete and to continue to afford applicant the benefit of compact prosecution, the requirement to complete the response within a one month time limit is waived, the amendment is entered and the claims are examined on the merits.

Drawings

35 U.S.C. 113 Drawings.

The applicant shall furnish a drawing where necessary for the understanding of the subject matter sought to be patented. **When the nature of such subject matter admits of illustration by a drawing and the applicant has not furnished such a drawing, the Director may require its submission within a time period of not less than two months from the sending of a notice thereof [emphasis added].** Drawings submitted after the filing date of the application may not be used (i) to overcome any insufficiency of the specification due to lack of an enabling disclosure or otherwise inadequate disclosure therein, or (ii) to supplement the original disclosure thereof for the purpose of interpretation of the scope of any claim.

37 CFR 1.81 Drawings required in patent application.

(a) The applicant for a patent is required to furnish a drawing of his or her invention where necessary for the understanding of the subject matter sought to be patented; this drawing, or a high quality copy thereof, must be filed with the application. Since corrections are the responsibility of the applicant, the original drawing(s) should be retained by the applicant for any necessary future correction.

(b) Drawings may include illustrations which facilitate an understanding of the invention (for example, flowsheets in cases of processes, and diagrammatic views).

(c) **Whenever the nature of the subject matter sought to be patented admits of illustration by a drawing without its being necessary for the understanding of the subject matter and the applicant has not furnished such a drawing, the examiner will require its submission within a time period of not less than two months from the date of the sending of a notice thereof [emphasis added].**

37 CFR 1.83 Content of drawing.

(a) **The drawing in a nonprovisional application must show every feature of the invention specified in the claims [emphasis added].** However, conventional features disclosed in the description and claims, where their detailed illustration is not essential for a proper understanding of the invention, should be illustrated in the drawing in the form of a graphical drawing symbol or a labeled representation (e.g., a labeled rectangular box). In addition, tables and sequence listings that are included in the specification are, except for applications filed under 35 U.S.C. 371, not permitted to be included in the drawings.

(b) When the invention consists of an improvement on an old machine the drawing must when possible exhibit, in one or more views, the improved portion itself, disconnected from the old structure, and also in another view, so much only of the old structure as will suffice to show the connection of the invention therewith.

(c) Where the drawings in a nonprovisional application do not comply with the requirements of paragraphs (a) and (b) of this section, the examiner shall require such additional illustration within a time period of not less than two months from the date of the sending of a notice thereof. Such corrections are subject to the requirements of § 1.81(d).

MPEP 608.02I. DRAWING REQUIREMENTS

The first sentence of 35 U.S.C 113 requires a drawing to be submitted upon filing where such drawing is necessary for the understanding of the invention. In this situation, the lack of a drawing renders the application incomplete and, as such, the application cannot be given a filing date until the drawing is received. **The second sentence of 35 U.S.C. 113 addresses the situation wherein a drawing is not necessary for the understanding of the invention, but the subject matter sought to be patented admits of illustration and no drawing was submitted on filing. The lack of a drawing in this situation does not render the application incomplete but rather is treated as an informality. The examiner should require such drawings in almost all such instances.**

Such drawings could be required during the initial processing of the application but do not have to be furnished at the time the application is filed. The applicant is given at least 2 months from the date of the letter requiring drawings to submit the drawing(s) [emphasis added].

MPEP 608.02IV. HANDLING OF DRAWING REQUIREMENTS UNDER THE SECOND SENTENCE OF 35 U.S.C 113 - ILLUSTRATION SUBSEQUENTLY REQUIRED

35 U.S.C.113 addresses the situation wherein a drawing is not necessary for the understanding of the invention, but the subject matter sought to be patented admits of illustration by a drawing and the applicant has not furnished a drawing. The lack of a drawing in this situation does not render the application incomplete but rather is treated as an informality. A filing date will be accorded with the original presentation of the papers, despite the absence of drawings. **The acceptance of an application without a drawing does not preclude the examiner from requiring an illustration in the form of a drawing under 37 CFR 1.81(c) or 37 CFR 1.83(c). In requiring such a drawing, the examiner should clearly indicate that the requirement is made under 37 CFR 1.81(c) or 37 CFR 1.83(a) and be careful not to state that he or she is doing so "because it is necessary for the understanding of the invention," as that might give rise to an erroneous impression as to the completeness of the application as filed. Examiners making such requirements are to specifically require, as a part of the applicant's next reply, at least an ink sketch or permanent print of any drawing in reply to the requirement, even though no allowable subject matter is yet indicated. This will afford the examiner an early opportunity to determine the sufficiency of the illustration and the absence of new matter. See 37 CFR 1.121 and 37 CFR 1.81(d) [emphasis added].**

Every application must be complete in itself so far as the illustration of what is claimed is concerned and **the question is not whether the invention can be understood without a drawing but whether the nature of the case admits of one [emphasis added].** (In re Complete Application-Drawing Required, 152 USPQ 290 (Comm'r Pat. 1966))

As stated in Rule 71(b) of the Rules of Practice of the U. S. Patent

Page 245 Office, the specification must "describe completely a specific embodiment of the * * * machine * * *". Further, **Rule 83 recites that "The drawing must show every feature of the invention specified in the claims [emphasis added]."** While petitioner contends that the particular operating means is immaterial he has nevertheless submitted in the amendment of June 5, 1961 a disclosure of a particular operating means. The examiner has held however that the proposed amendment includes new matter. In a situation like this the onus is on the applicant to show by prior art evidence that the subject matter prescribed by the proposed amendment is not new matter but is instead actually old and would suggest the incorporation of itself into the present disclosure. In re Chaplin, 1948 C.D. 511, 77 USPQ 601, 1957 C.D. 321, 114 USPQ 157. Applicant has of course made no such presentation. In the absence of such showing the examiner was justified in not entering the amendment of June 5, 1961. (Ex parte HELMERSON, 130 USPQ 244 (PTO 1961))

Title 35 of the United States code, sections 111 and 113, provide that a patent application shall include a drawing when the nature of the case admits it and Patent Office Rule 83 provides that the drawing must show every feature of the invention specified in the claims. It is evident that these conditions are not satisfied in the present case since claims 4 to 13 inclusive comprise various specific structural limitations. The fact that this application refers to an earlier case which includes a drawing is not controlling here. Every application must be complete in itself so far as the illustration of what is claimed is concerned and the question is not whether the invention can be understood without a drawing but whether the nature of the case admits of one. (In re Complete Application-Drawing Required, 152 USPQ 290 (Comm'r Pat. 1966))

The Primary examiner, it is noted, did not reject these claims as drawn to subject matter not disclosed, but objected to them on the ground that the "details" were not "shown" in the drawing. His action was in accord with long established practice, as shown by the following quotation from Ex parte Davin, 1902 C.D. 251 (emphasis added): This is a petition from an action of the examiner objecting to the drawing and claims of the above-entitled application. The examiner has required that the drawing be amended to show the grain of the wood running lengthwise. The specification so describes the grain, and this feature is included in the claims. It is therefore an essential feature of the invention that the grain shall run lengthwise. The examiner's requirement was right, since the rules require that the drawing must show every feature of the invention covered by the claims. (Rule 50). (Marks v. Hodgins, 99 USPQ 23 (Bd. Pat. App. & Int. 1953))

See also, *Bocciarelli v. Huffman*, 109 USPQ 385 (CCPA 1956); and *WARNER JEWELRY CASE COMPANY v. WOLFSHEIM & SACHS, INC.*, 68 USPQ 267 (DC WNY 1946).

The subject matter of this application admits of illustration by a drawing. Applicant is required to furnish a drawing under 37 CFR 1.81(c).

The subject matter that admits of illustration is the following:

Re claim 21: bonding wires electrically connecting the polyimide wiring board to the external connection terminal, wherein each of the bonding wires has an end connected to the portion of the at least one end of the polyimide wiring board fixed to the first major surface of the heat sink.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following features must be shown or the feature(s) canceled from the claim(s):

Re claim 21: bonding wires electrically connecting the polyimide wiring board to the external connection terminal, wherein each of the bonding wires has an end connected to the portion of the at least one end of the polyimide wiring board fixed to the first major surface of the heat sink.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of

the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 8, 21-26 and 28-30 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The undescribed subject matter is the following:

Re claim 21: bonding wires electrically connecting the polyimide wiring board to the external connection terminal, wherein each of the bonding wires has an end connected to the portion of the at least one end of the polyimide wiring board fixed to the first major surface of the heat sink.

To further clarify, there is original support, e.g., figures 6a and 7, only for bonding wires 21 electrically connecting the polyimide wiring board 20 to the circuit board 13, wherein each of the bonding wires has an end connected to the portion of the at least one end of the polyimide wiring board fixed to the first major surface of the heat sink.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The scope of the following language is unclear because the language is not clearly defined in the disclosure, and its meaning is otherwise indeterminable:

Re claim 8: transmission fluid.

It is particularly unclear if/how the term "transmission" structurally limits the term "fluid."

Claim Objections

Claim 8 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

To further clarify, claim 8 is dependent on non-previous claim 22.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

In the rejections *infra*, generally, reference labels and other claim element identifiers are recited only for the first recitation of identical claim elements.

Claims 21, 22, 24, 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Clayton (6049975), Higashiguchi (6023098) and Abbot (20030137032).

At column 4, line 59 to column 9, line 24; column 10, lines 39-61; column 11, line 31 to column 12, line 25; column 17, lines 7-29; column 17, line 53 to column 19, line 45; column 20, lines 21-32; column 22, lines 32-53; column 27, lines 24-28; column 29, lines 32-51; column 30, lines 44-55; and column 32, lines 44-48, Clayton discloses the following:

Re claim 21: A control unit:

As the need arises for increasing numbers of control functions, signals and data in/out connections ... In this manner, semiconductor devices and passive components are connected in circuit and are able to exchange data, control signals and voltages between one another and between contacts 22 arrayed along one or more edges of the molded frame. ... As shown in any of the various embodiments, a variety of semiconductor devices 54 are readily assembled into the module of the present invention. Typical devices include, but are not limited to, Memory chips (DRAM, AS-DRAMs, Flash-EEPROM, ROM, Fast/Slow-Static RAMs, Ferro-electric RAM, et. al.), Microprocessor, Application Specific IC's (ASICs), Gate Array devices, Telecommunication IC's and others manufactured in CMOS, BiCMOS, GaAs and other technologies compatible with TTL, ECL, FAST and other logic interface standards. Typical applications in which this invention would find usage include main memory storage or digital and analog signal processing for devices such as: handheld personal digital assistants (PDA's), sub-notebook and notebook sized computers, desktops, workstations, mainframes, file-servers, and super-computers, and other graphic intensive applications, such as high definition television (HDTV), "on-demand" video storage and server units, handheld personal communication and data/information display devices.

for controlling an engine or transmission assembly of an automobile comprising: a multilayered wiring board 50 mounted with at least two electronic components 54; a polyamide wiring board 50 mounted with at least one heat generating component 54; a "heat sink" 48 having an inherently higher heat conductivity than heat conductivities of the multilayered wiring board and the polyamide wiring board and having opposed first and second 48' major surfaces, wherein the multilayered wiring board is fixed to the first major surface of the heat sink via an adhesive 52 and the polyamide wiring board is fixed to the second major surface of the heat sink via an adhesive 52 and is bent at at least one end, and a portion of the at least one end is fixed to the first major surface of the heat sink via an

adhesive 52; an external connection terminal (60 and "conductive lines and traces routed across the surface") to which the multilayered wiring board and the polyamide wiring board are electrically connected; bonding wires 73 electrically connecting the multilayered wiring board and polyamide wiring board to the external connection terminal:

In FIG. 18B, electrical connection between the substrate pads 60 are provided through an electrical trace(s) at folded end 51. However, this requires a long signal path routed over and across the top end of the module and back down the opposite side.

wherein each of the bonding wires has an end connected to the multilayered wiring board or the portion of the at least one end of the polyamide wiring board fixed to the first major surface of the heat sink; and a thermosetting resin composition 70 with which the entire surfaces of the multilayered wiring board and the polyamide wiring board, the bonding wires, a part of the heat sink and a part of the external connection terminal are integrally molded.

Re claim 22: A control unit according to claim 21, wherein a part of a passage "entrance and exit channels" for circulating a cooling medium "coolant" is inherently formed in an external layer 48 of the control unit.

Re claim 24: A control unit according to claim 21, wherein the heat sink is made of a clad "plated" material containing a copper alloy or copper "copper-nickel alloys."

Re claim 26: A control unit according to claim 21, wherein the multilayered wiring board comprises at least one ceramic substrate.

Re claim 28: A control unit according to claim 27, wherein the multilayered wiring board and the polyamide wiring board are electrically connected.

The following is further clarified:

Re claim 21: a multilayered wiring board 50; a polyamide wiring board 50.

In particular, it is noted that the scope of claim 21 is not limited to two distinct or separate wiring boards, and encompasses at least a single multilayered, polyimide wiring board or at least one multilayered wiring board integral with at least one polyimide wiring board.

The following is further clarified:

Re claim 21: inherently for controlling an engine or transmission assembly of an automobile.

In particular, the language, "for controlling an engine or transmission assembly of an automobile" has been given little patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where, as here, it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process

steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

In any case, the language, "for controlling an engine or transmission assembly of an automobile" is merely a statement of intended use of the unit that does not appear to result in a structural difference between the claimed unit and the unit of Clayton.

Further, because the invention of Clayton appears to have the same structure as the claimed structure, it appears to be capable of being used for the intended use for controlling an engine or transmission assembly of an automobile, and the statement of intended use does not patentably distinguish the claimed structure from the structure of Clayton.

See *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963) (Court held that the purpose or intended use of hair curling was of no significance to the structure and process of making). The manner in which a product operates is not germane to the issue of patentability of the product; *Ex parte Wikdahl* 10 USPQ 2d 1546, 1548 (BPAI 1989); *Ex parte McCullough* 7 USPQ 2d 1889, 1891 (BPAI 1988); *In re Finsterwalder* 168 USPQ 530 (CCPA 1971); *In re Casey* 152 USPQ 235, 238 (CCPA 1967). And, claims directed to product must be distinguished from the prior art in terms of structure rather than function. *In re Danley*, 120 USPQ 528, 531 (CCPA 1959). "Apparatus claims cover what a device is, not what a device does [or is intended to do]." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). Also, "Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim."; *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969). And, "Inclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims."; *In re Young*, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 136 USPQ 458, 459 (CCPA 1963)).

To continue to afford applicant the benefit of compact prosecution, it is noted that the amendatory claim 21 preamble language, "for controlling an engine" is not seen to be drawn to the species nonelected in the paper filed on 05-15-06, "wherein the apparatus is fixed on an engine compartment," because, as elucidated supra, the amendatory language does not structurally limit claim 21 to the nonelected species.

The following is further clarified:

Re claim 21: a heat sink 48 having an inherently higher heat conductivity than heat conductivities of the multilayered wiring board and the polyamide wiring board.

In particular, Clayton discloses that the heat sink is "copper-nickel alloys," and copper-nickel alloys inherently have a higher heat conductivity than the polyamide multilayered wiring boards.

In any case, as cited, Clayton discloses that the heat sink and wiring board heat conductivities are result effective variables.

Therefore, it would have been obvious to provide this/these relative conductivity dimensional limitation(s) because it has been held that mere dimensional limitations, including "the mere change of the relative size of the co-acting members of a known combination," are prima facie obvious absent a disclosure, as here, that the limitations are for a particular unobvious purpose, produce an unexpected result or are otherwise critical:

[A]ppellant does not contend that the combination of a magnetic fastener and an instrument having a magnetic head such as a tack and a magnetic hammer is new but that his particular combination is patentable because his magnetic tool is of substantially the same dimensions as the disk. ... It is well established that the mere change of the relative size of the co-acting members of a known combination will not endow an otherwise unpatentable combination with patentability. *Electric Cable Joint Co. v. Brooklyn Edison Co., Inc.*, 292 U.S. 69, 78 L.Ed. 1131, 54 S.Ct. 586, 21 USPQ 1 ; In re *Irrmscher*, 36 CCPA 767, 171 F.2d 303, 80 USPQ 136 ; In re *Bennett*, 17 CCPA 1113, 40 F.2d 755, 5 USPQ 173. (In re *Troiel*, 124 USPQ 502 (C.C.P.A. 1960))

We do not feel that this limitation is patentably significant since it at most relates to the size of the article under consideration which is not ordinarily a matter of invention. In re *Yount*, 36 C.C.P.A. (Patents) 775, 171 F.2d 317, 80 USPQ 141. (In re *Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955))

Since the result sought and the ingredients used were known, we agree with the board it was within the expected skills of one having ordinary skill in this art to arrive at the optimum proportion of those ingredients. ... In view of the prior art teachings we agree with the conclusion that the proportions of ingredients would have been obvious to a person having ordinary skill in the art at the time the invention as claimed in claims 41 and 42 was made. In re *REESE*, 129 USPQ 402 (C.C.P.A. 1961)

As noted above, Matzen discloses that the flexible portion of his container is drawn into the rigid top portion, filling the space thereof. Appellants have presented no argument which convinces us that the particular configuration of their container is significant or is anything more than one of numerous configurations a person of ordinary skill in the art would find obvious for the purpose of providing mating surfaces in the collapsed container of Matzen. See *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459. In re *Dailey and Eilers*, 149 USPQ 47 (C.C.P.A. 1966)

MPEP 2144.04IVA. Changes in Size/Proportion

In re *Rose* , 220 F.2d 459, 105 USPQ 237 (CCPA 1955) (Claims directed to a lumber package "of appreciable size and weight requiring handling by a lift truck" where held unpatentable over prior art lumber packages which could be lifted by hand because limitations relating to the size of the package were not sufficient to patentably distinguish over the prior art.); In re *Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976) ("mere scaling up of a prior art process capable of being scaled up, if such were the case, would not

establish patentability in a claim to an old process so scaled.” 531 F.2d at 1053, 189 USPQ at 148.). In *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

MPEP 2144.04IVB. Changes in Shape

In re *Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) (The court held that the configuration of the claimed disposable plastic nursing container was a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed container was significant.).

See also In re *Kirke*, 17 C.C.P.A. (Patents) 1121, 40 F.2d 765, 5 USPQ 539; In re *Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984).

Also, it would have been obvious to try variations of these result effective variable(s), including the claimed conductivity variation(s), inherently resulting in the claimed relative conductivity, because:

[T]he court erred in concluding that a patent claim cannot be proved obvious merely by showing that the combination of elements was obvious to try. ... The same constricted analysis led the Court of Appeals to conclude, in error, that a patent claim cannot be proved obvious merely by showing that the combination of elements was ‘obvious to try.’ ... [A] person of ordinary skill in the art has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. ... [T]he fact that a combination was obvious to try might show that it was obvious under §103. *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007)

See also Pfizer Inc. v. Apotex Inc., 82 USPQ2d 1852 (Fed. Cir. 2007); In re Kubin, 90 USPQ2d 1417 (Fed. Cir. 2009); In re Aller, Lacey, and Hall, 105 USPQ 233 (C.C.P.A. 1955).

Applying the same legal precedent, it also would have been obvious to try variations of these result effective variable(s), including the claimed conductivity variation(s), inherently resulting in the claimed relative conductivity, because a change in dimension would have been a known option within the technical grasp of a person of ordinary skill in the art.

Moreover, as reasoned from well established legal precedent, it would have been an obvious matter of design choice bounded by well known manufacturing constraints and ascertainable by routine experimentation and optimization to choose the particular claimed relative conductivity limitation(s) because applicant has not disclosed that, in view of the applied prior art, the limitation(s) is/are for a particular unobvious purpose, produce(s) an unexpected result or is/are otherwise critical. For that matter, applicant has not disclosed that the particular conductivity limitation(s) is/are for **any** purpose or produce(s) **any** result. Indeed, it has been held that optimization of parameters and range limitations is prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result or are otherwise critical:

Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is

evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." MPEP 2144.05(II)

Ecolab's expert admitted that one skilled in the art would know how to adjust application parameters to determine the optimum parameters for a particular solution. *Ecolab, Inc. v. FMCCorp.*, 569 F.3d 1335 (Fed Cir. 2009).

Also see *In re Aller*, 220 F.2d 454, 105 USPQ 233, 235 (CCPA 1955);
In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969), *Merck & Co. Inc. v. Biocraft Laboratories Inc.*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989), and *In re Kulling*, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990).

Applicant can rebut a *prima facie* case of obviousness based on overlapping ranges by showing the criticality of the claimed range. "The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. . . . In such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range." *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). MPEP 2144.05(III)

See MPEP § 716.02 - § 716.02(g) for a discussion of criticality and unexpected results.

Still further, it would have been obvious to try the heat sink 48 having a higher heat conductivity than heat conductivities of the multilayered wiring board and the polyamide wiring board because a person of ordinary skill would be motivated to solve the problem of heat conductivity of the heat sink and wiring boards and there are a finite number of readily identified,

predictable solutions; namely, the heat sink 48 having a higher, lower or equal heat conductivity than heat conductivities of the multilayered wiring board and the polyamide wiring board; and:

"[T]he court erred in concluding that a patent claim cannot be proved obvious merely by showing that the combination of elements was obvious to try. ... The same constricted analysis led the Court of Appeals to conclude, in error, that a patent claim cannot be proved obvious merely by showing that the combination of elements was 'obvious to try.' ... "When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, person of ordinary skill in the art has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. ... [T]he fact that a combination was obvious to try might show that it was obvious under §103." KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385 (U.S. 2007). See also, Pfizer Inc. v. Apotex Inc., 82 USPQ2d 1852 (Fed. Cir. 2007); In re Kubin, 90 USPQ2d 1417 (Fed. Cir. 2009).

Similarly, the genus of the heat conductivities of the heat sink and the wiring boards would inherently anticipate the species of the heat sink having a higher heat conductivity than heat conductivities of the multilayered wiring board and the polyamide wiring board because the genus contains only 9 species; namely, the species of the heat sink having a higher, lower or equal heat conductivity than heat conductivities of the wiring boards, and one skilled in the art would at once envisage each species of the genus. MPEP 2144.08II4(a): . . . "it has been held that a prior art genus containing only 20 compounds and a limited number of variations in the generic chemical formula inherently anticipated a claimed species within the genus because 'one skilled in [the] art would... [at once] envisage each member' of the

genus. In re Petering, 301 F.2d 676, 681, 133 USPQ 275, 280 (CCPA 1962) (emphasis in original)."

The following is further clarified:

Re claim 22: A control unit according to claim 21, wherein a part of a passage for circulating a cooling medium is formed in an external layer of the control unit.

In particular, it is inherent that the entrance and exit channels must communicate with a coolant passage formed in an external layer of the control unit.

However, Clayton does not appear to explicitly disclose the following:

Re claim 21: a polyimide wiring board.

Nonetheless, Clayton discloses a polyamide wiring board.

Furthermore, at column 6, lines 4-6, Higashiguchi discloses that polyamide and polyimide are alternatives and equivalents.

Therefore, as reasoned from well established legal precedent, it would have been obvious to substitute or combine the polyimide of Higashiguchi for or with the polyamide of Clayton.

See In re May (CCPA) 136 USPQ 208 (It is our opinion that the substitution of Wille's type seal for the cement of Hallauer in Figure 1 would be obvious to persons of ordinary skill in the art from the disclosures of these references, merely involving an obvious selection between known alternatives in the art and the application of routine technical skills.); In re Cornish (CCPA) 125 USPQ 413; In re Soucy (CCPA) 153 USPQ 816; Sabel et al. v. The Wickes Corporation et al. (DC SC) 175 USPQ 3; Ex parte Seiko Koko Kabushiki Kaisha Co. (BdPatApp&Int) 225 USPQ 1260; and Ex parte Rachlin (BdPatApp&Int) 151 USPQ 56. See also Smith v. Hayashi, 209 USPQ 754

(Bd. of Pat. Inter. 1980) (However, there was evidence that both phthalocyanine and selenium were known photoconductors in the art of electrophotography. "This, in our view, presents strong evidence of obviousness in substituting one for the other in an electrophotographic environment as a photoconductor." 209 USPQ at 759.). An express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious. In re Fout, 675 F.2d 297, 213 USPQ 532 (CCPA 1982). "It is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose.... [T]he idea of combining them flows logically from their having been individually taught in the prior art." In re Kerkhoven, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980) (citations omitted). See also In re Crockett, 279 F.2d 274, 126 USPQ 186 (CCPA 1960); Ex parte Quadranti, 25 USPQ2d 1071 (Bd. Pat. App. & Inter. 1992).

In addition, it would have been obvious to try the substitution or combination of the polyimide of Higashiguchi for or with the polyamide of Clayton because the substitution of, or combination with, one known alternative element for or with another would have yielded predictable results to one of ordinary skill in the art at the time of the invention; and:

"Such a combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. ... [T]he court erred in concluding that a patent claim cannot be proved obvious merely by showing that the combination of elements was obvious to try. ... The same constricted analysis led the Court of Appeals to conclude, in error, that a patent claim cannot be proved obvious merely by showing that the combination of elements was 'obvious to try.'... [T]he fact that a combination was obvious to try might show that it was obvious under §103." KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385 (U.S. 2007). See also, Pfizer Inc. v. Apotex Inc., 82 USPQ2d 1852 (Fed. Cir. 2007); In re Kubin, 90 USPQ2d 1417 (Fed. Cir. 2009).

Also, it would have been obvious to substitute or combine the polyimide of Higashiguchi for or with at least some of the polyamide of

Clayton because it would facilitate provision of the wiring board of Clayton, and substitution or combination of a known element based on its suitability for its intended use has been held to be prima facie obvious.

See *Ryco, Inc. v. Ag-Bag Corp.*, 857 F.2d 1418, 8 USPQ2d 1323 (Fed. Cir. 1988) (Claimed agricultural bagging machine, which differed from a prior art machine only in that the brake means were hydraulically operated rather than mechanically operated, was held to be obvious over the prior art machine in view of references which disclosed hydraulic brakes for performing the same function, albeit in a different environment); and MPEP 2144.07.

Moreover, this combination of Clayton and Higashiguchi provides the heat sink 48 having an inherently and obvious higher heat conductivity than that of the polyimide wiring board for the same reasons Clayton is applied to show the heat sink having an inherently and obviously higher heat conductivity than that of the polyamide wiring board.

However, Clayton does not appear to explicitly disclose the following:

Re claim 21: thermosetting resin composition.

Nonetheless, at paragraphs 7, 48, 54, 55, 62 and claim 8, Abbott discloses a thermosetting resin composition 311.

Moreover, the thermosetting resin composition of Abbot and the resin composition of Clayton are known alternatives in the art.

Therefore, as reasoned from well established legal precedent, it would have been obvious to substitute or combine the thermosetting resin composition of Abbot for or with the resin composition of Clayton.

See *In re May* (CCPA) 136 USPQ 208 (It is our opinion that the substitution of Wille's type seal for the cement of Hallauer in Figure 1 would be obvious to persons of ordinary skill in the art from the disclosures of these references, merely involving an obvious selection between known alternatives in the art and the application of routine technical skills.); *In re Cornish* (CCPA) 125 USPQ 413; *In re Soucy* (CCPA) 153 USPQ 816; *Sabel et al. v. The Wickes Corporation et al.* (DC SC) 175 USPQ 3; *Ex parte Seiko Koko Kabushiki Kaisha Co.* (BdPatApp&Int) 225 USPQ 1260; and *Ex parte Rachlin* (BdPatApp&Int) 151 USPQ 56. See also *Smith v. Hayashi*, 209 USPQ 754 (Bd. of Pat. Inter. 1980) (However, there was evidence that both phthalocyanine and selenium were known photoconductors in the art of electrophotography. "This, in our view, presents strong evidence of obviousness in substituting one for the other in an electrophotographic environment as a photoconductor." 209 USPQ at 759.). An express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious. *In re Fout*, 675 F.2d 297, 213 USPQ 532 (CCPA 1982). "It is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose.... [T]he idea of combining them flows logically from their having been individually taught in the prior art." *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980) (citations omitted). See also *In re Crockett*, 279 F.2d 274, 126 USPQ 186 (CCPA 1960); *Ex parte Quadranti*, 25 USPQ2d 1071 (Bd. Pat. App. & Inter. 1992).

In addition, it would have been obvious to substitute or combine the thermosetting resin composition of Abbot for or with the resin composition of Clayton because the substitution of, or combination with, one known alternative element for or with another would have yielded predictable results to one of ordinary skill in the art at the time of the invention; and:

"Such a combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. ... [T]he court erred in concluding that a patent claim cannot be proved obvious merely by showing that the combination of elements was obvious to try. ... The same constricted analysis led the Court of Appeals to conclude, in error, that a patent claim cannot be proved obvious merely by showing that the combination of elements was 'obvious to try.'... [T]he fact that a combination was obvious to try might show that it was obvious under §103." *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007). See also,

Pfizer Inc. v. Apotex Inc., 82 USPQ2d 1852 (Fed. Cir. 2007); In re Kubin, 90 USPQ2d 1417 (Fed. Cir. 2009).

Also, it would have been obvious to substitute or combine the thermosetting resin composition of Abbot for or with at least some of the resin composition of Clayton because it would facilitate provision of the resin composition of Clayton, and substitution or combination of a known element based on its suitability for its intended use has been held to be *prima facie* obvious.

See *Ryco, Inc. v. Ag-Bag Corp.*, 857 F.2d 1418, 8 USPQ2d 1323 (Fed. Cir. 1988) (Claimed agricultural bagging machine, which differed from a prior art machine only in that the brake means were hydraulically operated rather than mechanically operated, was held to be obvious over the prior art machine in view of references which disclosed hydraulic brakes for performing the same function, albeit in a different environment; and MPEP 2144.07.

Still further, it would have been obvious to combine this disclosure of Abbot with the disclosure of Clayton because, as disclosed by Abbott as cited, it would provide good adhesion of the resin composition and heat sink of Clayton.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Clayton, Higashiguchi and Abbot as applied to claim 22, and further in combination with Thorum (20020088304).

Clayton discloses the following:

Re claim 8: said cooling medium is an inherent transmission fluid "gas or liquid."

To further clarify, Clayton discloses an inherent transmission fluid because the term "transmission" merely limits the scope of the term "fluid" to the intended use of the fluid as transmission fluid, and does not appear to result in a structural difference between the claimed structure and the structure of Clayton.

Furthermore, because the fluid of Clayton appears to be the same structure as the claimed fluid, it appears to be capable of being used for the same intended use as transmission fluid and the intended use does not patentably distinguish the claimed process/structure from the process/structure of Clayton.

See *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963) (Court held that the purpose or intended use of hair curling was of no significance to the process and structure of making). The manner in which a product operates is not germane to the issue of patentability of the product; *Ex parte Wikdahl* 10 USPQ 2d 1546, 1548 (BPAI 1989); *Ex parte McCullough* 7 USPQ 2d 1889, 1891 (BPAI 1988); *In re Finsterwalder* 168 USPQ 530 (CCPA 1971); *In re Casey* 152 USPQ 235, 238 (CCPA 1967). And, claims directed to product must be distinguished from the prior art in terms of structure rather than function. *In re Danley*, 120 USPQ 528, 531 (CCPA 1959). "Apparatus claims cover what a device is, not what a device does [or is intended to do]." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). Also, "Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim."; *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969). And, "Inclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims."; *In re Young*, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 136 USPQ 458, 459 (CCPA 1963)).

However, Clayton, Higashiguchi and Abbot do not appear to explicitly disclose the following:

Re claim 8: the control unit is fixed on the interior of an automatic transmission assembly of an automobile.

Notwithstanding, at paragraphs 33-37, Thorum discloses wherein a control unit 16 is fixed on the interior of an automatic transmission assembly 12 of an automobile.

Moreover, it would have been obvious to combine this disclosure of Thorum with the disclosure of the applied prior art because it would facilitate provision and cooling of the apparatus of Thorum and it would provide a use for the control unit of Clayton, Higashiguchi and Abbot.

Claims 23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clayton, Higashiguchi and Abbot as applied to claim 21 and further in combination with Vargo (20030152766).

Clayton discloses the following:

Re claim 23: the heat sink is made of a metal compound with electrical conductivity.

However, Clayton, Higashiguchi and Abbot do not appear to explicitly disclose the following:

Re claim 23: the adhesive is formed by an insulating organic paste.

Re claim 25: the adhesive is made of a thermosetting resin composition containing an epoxy resin and an inorganic filler

Still, at paragraphs 59 and 100, Vargo discloses wherein the adhesive is formed by an insulating organic paste, and the adhesive is made of a thermosetting resin composition containing an epoxy resin and an inorganic filler.

Moreover, the adhesives of Vargo and Clayton are known alternatives in the art.

Therefore, as reasoned from well established legal precedent, it would have been obvious to substitute or combine the adhesive of Vargo for or with the adhesive of Clayton.

See *In re May* (CCPA) 136 USPQ 208 (It is our opinion that the substitution of Wille's type seal for the cement of Hallauer in Figure 1 would be obvious to persons of ordinary skill in the art from the disclosures of these references, merely involving an obvious selection between known alternatives in the art and the application of routine technical skills.); *In re Cornish* (CCPA) 125 USPQ 413; *In re Soucy* (CCPA) 153 USPQ 816; *Sabel et al. v. The Wickes Corporation et al.* (DC SC) 175 USPQ 3; *Ex parte Seiko Koko Kabushiki Kaisha Co.* (BdPatApp&Int) 225 USPQ 1260; and *Ex parte Rachlin* (BdPatApp&Int) 151 USPQ 56. See also *Smith v. Hayashi*, 209 USPQ 754 (Bd. of Pat. Inter. 1980) (However, there was evidence that both phthalocyanine and selenium were known photoconductors in the art of electrophotography. "This, in our view, presents strong evidence of obviousness in substituting one for the other in an electrophotographic environment as a photoconductor." 209 USPQ at 759.). An express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious. *In re Fout*, 675 F.2d 297, 213 USPQ 532 (CCPA 1982). "It is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose.... [T]he idea of combining them flows logically from their having been individually taught in the prior art." *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980) (citations omitted). See also

In re Crockett, 279 F.2d 274, 126 USPQ 186 (CCPA 1960); Ex parte Quadranti, 25 USPQ2d 1071 (Bd. Pat. App. & Inter. 1992).

In addition, it would have been obvious to substitute or combine the adhesive of Vargo for or with the adhesive of Clayton because the substitution of, or combination with, one known alternative element for or with another would have yielded predictable results to one of ordinary skill in the art at the time of the invention; and:

"Such a combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. ... [T]he court erred in concluding that a patent claim cannot be proved obvious merely by showing that the combination of elements was obvious to try. ... The same constricted analysis led the Court of Appeals to conclude, in error, that a patent claim cannot be proved obvious merely by showing that the combination of elements was 'obvious to try.'... [T]he fact that a combination was obvious to try might show that it was obvious under §103." KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385 (U.S. 2007). See also, Pfizer Inc. v. Apotex Inc., 82 USPQ2d 1852 (Fed. Cir. 2007); In re Kubin, 90 USPQ2d 1417 (Fed. Cir. 2009).

Also, it would have been obvious to substitute or combine the adhesive of Vargo for at least some of the adhesive of Clayton because it would facilitate provision of the adhesive of Clayton, and substitution or combination of a known element based on its suitability for its intended use has been held to be prima facie obvious.

See Ryco, Inc. v. Ag-Bag Corp., 857 F.2d 1418, 8 USPQ2d 1323 (Fed. Cir. 1988) (Claimed agricultural bagging machine, which differed from a prior art machine only in that the brake means were hydraulically operated rather than mechanically operated, was held to be obvious over the prior art machine in view of references which disclosed hydraulic brakes for performing the same function, albeit in a different environment; and MPEP 2144.07.

Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Clayton, Higashiguchi and Abbot as applied to claim 22, and further in combination with Weld (5696405).

Clayton, Higashiguchi and Abbot do not appear to explicitly disclose the following:

Re claim 29: the part of the passage for circulating a cooling medium is formed in the thermosetting resin composition.

Regardless, at column 3, lines 8-21, Weld discloses wherein a part of a passage 30 for circulating a cooling medium is formed in a resin composition 22.

Furthermore, it would have been obvious to combine this disclosure of Weld with the disclosure of the applied prior art because it would facilitate cooling of the product of the applied prior art.

Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Clayton, Higashiguchi and Abbot as applied to claim 21, and further in combination with Hortaleza (20040012078).

Clayton, Higashiguchi and Abbot do not appear to explicitly disclose the following:

Re claim 30: the heat sink is made of a clad material having a layer comprising an alloy comprising iron and nickel clad on both sides with layers comprising copper.

Notwithstanding, at paragraph 45, Hortaleza discloses the heat sink 620 is made of a "clad" material having a layer comprising an alloy comprising iron and nickel clad on both sides with layers comprising copper.

Moreover, it would have been obvious to combine this disclosure of Hortaleza with the disclosure of the applied prior art because, as disclosed by Hortaleza, it would provide the heat sink with a desirable relatively low coefficient of thermal expansion.

Response to Arguments

Applicant's remarks filed on 03-22-10 and 09-22-10 have been fully considered, treated or rendered moot by the restatement of the Office action *supra*, addressed *infra* and/or adequately addressed previously of record.

In the remarks filed on 03-22-10, applicant states:

In particular, claim 21 has been amended to recite that each of the bonding wires has an end connected to the multilayer wiring board or the portion of the least one end of the polyimide wiring board fixed to the first major surface of the heat sink. This amendment is supported by, e.g., Figures 6a and 7 and the description thereof in Applicants' specification, in which bonding wires 1 and 21 each has an end connected to the multilayer wiring board 13 or the portion of the at least one end of the polyimide wiring board 20 fixed to the first major surface of the heat sink 14.

This statement is respectfully traversed because the original disclosure, including the cited disclosure, does not provide support for the claim language, "each of the bonding wires has an end connected to the multilayered wiring board or the portion of the least one end of the polyimide wiring board fixed to the first major surface of the heat sink in combination with the claim 21 antecedent basis, "bonding wires electrically connecting" ... "the polyimide wiring board to the external connection terminal."

Also, applicant argues:

The Examiner alleges the Clayton patent to disclose a multilayer wiring board 50 mounted with at least two electronic components 54. However, element 50 of Clayton is a thin laminate circuit, the primary purpose of which is to provide electrical or optical interconnection between individual electronic devices 54 and discrete components 56 or a group of stacked electronic devices 52 mounted on the circuit 50, and to conduct data signals and control voltages to and from the termination pads 34 or 34' on the molded frame 12. See, e.g., the paragraph bridging columns 10 and 11 of Clayton. Thus, the electronic components 54 are individual electronic devices and are not mounted on the thin laminate circuit 50. Thus, the Clayton patent does not disclose an electronic circuit apparatus or automobile control unit including a multilayer wiring board mounted with at least two electronic components and a polyimide wiring board mounted with at least one heat generating component fixed to opposite surfaces of a heat sink, as presently claimed.

This argument is respectfully traversed because it is a non sequitur.

Specifically, the conclusions, "Thus, the electronic components 54 are individual electronic devices and are not mounted on the thin laminate circuit 50. Thus, the Clayton patent does not disclose an electronic circuit apparatus

or automobile control unit including a multilayer wiring board mounted with at least two electronic components and a polyimide wiring board mounted with at least one heat generating component fixed to opposite surfaces of a heat sink, as presently claimed," do not follow from the premise, "However, element 50 of Clayton is a thin laminate circuit, the primary purpose of which is to provide electrical or optical interconnection between individual electronic devices 54 and discrete components 56 or a group of stacked electronic devices 52 mounted on the circuit 50, and to conduct data signals and control voltages to and from the termination pads 34 or 34' on the molded frame 12. See, e.g., the paragraph bridging columns 10 and 11 of Clayton."

In any case, the rationale to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by applicant. See MPEP 2144 and *In re Linter*, 458 F.2d 1013, 173 USPQ 560 (CCPA 1972); *In re Dillon*, 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1990), cert. denied, 500 U.S. 904 (1991).

Applicant further contends:

Moreover, contrary to the allegations in the Office Action, the metal plate 48 of Clayton is disclosed to be a clad material (see, e.g., claims 24 and 30).

This contention is respectfully deemed unpersuasive because the alleged allegations in the Office action contrary to the alleged disclosure of Clayton are not identified and are otherwise indeterminable.

Relatedly, applicant alleges:

The word "clad" means that something, usually a metal, is sheathed or covered with a metal. By using a clad material, e.g., of copper-iron/nickel-copper layers, which has a low thermal-expansion property, for the heat sink, it is possible to reduce thermal stress, which would be caused under high-temperature environment due to the difference in the thermal expansion coefficients between different materials, and to prevent peeling, which would occur at the boundary between the heat sink and the mold material or between the heat sink and the wiring board. Such is not disclosed by Clayton.

These allegations are respectfully deemed unpersuasive because the scope of the claims is not limited to using a clad material, e.g., of copper-iron/nickel-copper layers, which has a low thermal-expansion property, for the heat sink, to make possible to reduce thermal stress, which would be caused under high-temperature environment due to the difference in the thermal expansion coefficients between different materials, and to prevent peeling, which would occur at the boundary between the heat sink and the mold material or between the heat sink and the wiring board, and Clayton is not necessarily applied for this disclosure.

Applicant also argues:

Additionally, the Clayton patent does not disclose a polyimide wiring board bent at at least one end such that the polyimide wiring board is fixed to one surface of a heat sink, and a portion of the bent end is fixed to the opposite surface of the heat sink. Furthermore, Clayton does not disclose the

combined use of a multilayered wiring board and a polyimide wiring board, whereby the multilayered wiring board is disposed on one surface of a heat sink and the polyimide wiring board is disposed on the other surface thereof, and whereby a heat generating component is mounted on the polyimide wiring board. Clearly, since the Clayton patent does not disclose the combined use of a multilayer wiring board and a polyimide wiring board and does not disclose a polyimide wiring board bent at at least one end and fixed to both surfaces of the heat sink, the Clayton patent does not disclose the manner in which the wiring boards are electrically connected to the external connection terminal as presently claimed.

This argument is respectfully deemed unpersuasive because Clayton is not applied to the rejection for a disclosure of a polyimide wiring board.

Further, applicant contends:

Persons of ordinary skill in the art could not easily have conceived of the automobile control unit of the present invention that realizes high-density mounting and heat-dissipating characteristics, based on the multichip module described in Clayton, which does not take into consideration application of such a circuit board to an automobile control unit and the use thereof in a high-temperature environment.

This contention is respectfully deemed unpersuasive because it is merely conclusory and not probative.

In any case, the scope of the claims is not limited to the application of such a circuit board to an automobile control unit and the use thereof in a high-temperature environment, and Clayton is not applied to the rejection for this disclosure.

Applicant also asserts:

The Higashiguchi et al. patent discloses a semiconductor device having terminals for heat radiation. This patent has been cited by the Examiner for its teachings that the flexible circuit boards can be made polyimide films,

polyester films, polycarbonate films or polyamide films. See, column 6, lines 4-6 of Higashiguchi et al.

This assertion is respectfully traversed because Higashiguchi is not cited in the Office action for its alleged teachings that the flexible circuit boards can be made polyimide films, polyester films, polycarbonate films or polyamide films.

Instead, Higashiguchi cited as follows:

Furthermore, at column 6, lines 4-6, Higashiguchi discloses that polyamide and polyimide are alternatives and equivalents.

Additionally, applicant alleges:

Even if one were to use the flexible circuit boards of Higashiguchi et al. in the multichip module of Clayton, it would appear that one would substitute the flexible circuit boards of Higashiguchi et al. for both of the thin laminate circuits 50 of Clayton. Again, this combination would not render obvious the combined use of a multilayered wiring board and a polyimide wiring board on opposite sides of the heat sink, as presently claimed.

This allegation is respectfully deemed unpersuasive because the Office action does not propose that one use the flexible circuit boards of Higashiguchi et al. in the multichip module of Clayton.

Applicant further asserts:

Nor does the Higashiguchi et al. patent render obvious the manner in which the polyimide wiring board is bent at at least one end so that it is fixed to both surfaces of the heat sink. Nor does it suggest the manner in which the bonding wires connect the wiring boards to the external connection terminal, as presently claimed.

This assertion is respectfully deemed unpersuasive because Higashiguchi is not relied on for these disclosures.

Also, applicant states:

While Abbott discloses plating a copper layer on all of the lead frame surfaces (see 0054 of Abbott), the purpose of this plating is merely to simplify the control of the subsequent crow? mate conversion process. It is submitted this teaching would not have provided any reason to make the cover plate 48 of Clayton of a clad material.

This statement is respectfully deemed unpersuasive because the Office action does not maintain that the alleged paragraph 54 disclosure of Abbot of plating a copper layer on all of the lead frame surfaces for the purpose merely to simplify the control of the subsequent crow? mate conversion process would have provided any reason to make the cover plate 48 of Clayton of a clad material.

Applicant further contends:

However, nothing in Thorum et al. would have provided any reason to modify the teachings of Clayton, Higashiguchi et al. and Abbot to arrive at the presently claimed invention Accordingly, claim 8 is patentable over of the proposed combination references at least for the reasons noted above. ... There is absolutely no reason in Vargo et al. or in any of the other prior art for one of ordinary skill in the art to have applied the adhesive described in Vargo et al. to adhere a wiring board to a heat sink. Moreover, even assuming, arguendo, one of ordinary skill in the art would have used the adhesive in this manner, it is submitted there is nothing in Vargo et al. that remedies any of the basic deficiencies noted above with respect to Clayton, Higashiguchi et al. and Abbott.

These contentions are respectfully traversed because proper rationale to combine Thorum and Vargo with the applied prior art is elucidated in the Office action.

In addition, applicant alleges:

The Examiner has cited Hortaleza publication as disclosing a heat sink made of a clayed material having copper-inbar-cooper layers.

This allegation is respectfully traversed because Hortaleza is not applied to the rejection for a disclosure of a heat sink made of a clayed material having copper-inbar-cooper layers.

For information on the status of this application applicant should check PAIR: Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alternatively, applicant may contact the File Information Unit at (703) 308-2733. Telephone status inquiries should not be directed to the examiner. See MPEP 1730VIC, MPEP 203.08 and MPEP 102.

Any other telephone inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Graybill at (571) 272-1930. Regular office hours: Monday through Friday, 8:30 a.m. to 6:00 p.m.

Group 2800 fax: (571) 273-8300.
Supervisor Kimberly Nguyen: (571) 272-2402

Application/Control Number: 10/801,697

Page 40

Art Unit: 2894

/David E Graybill/

Primary Examiner, Art Unit 2894